Contents of Volume 56

No. 1. JANUARY 1984

BRIEF REVIEW

Multiple inert gas elimination technique
M. P. Hlastala 1

Gate mechanism in breathlessness caused by chest wall vibration in humans
I. Homma, T. Obata, M. Sibuya, and M. Uchida 8

Breathing pattern of kittens during hypoxia
C. E. Blanco, M. A. Hanson, P. Johnson, and H. Rigatto 12

Determinants of increased energy cost of submaximal exercise in obese subjects
B. Anton-Kuchly, P. Roger, and P. Varene 18

Blood flow in exercising muscles by xenon clearance and by microsphere trapping
P. Cerretelli, C. Marconi, D. Pendergast, M. Meyer, N. Heisler, and J. Piiper 24

Neuromuscular blockade enhances phrenic nerve activity during high-frequency ventilation
S. J. England, A. Onayemi, and A. C. Bryan 31

Muscle capillary supply and fiber type characteristics in weight and power lifters
P. A. Tesch, A. Thorsson, and P. Kaiser 35

Hemodynamic and humoral effects of prostaglandin inhibition in exercising humans
J. Staessen, A. Cattaert, R. Fagard, P. Lijnen, E. Moerman, A. de Schaepdryver, and A. Amery 39

Comparison of motor unit activation during unilateral and bilateral leg extension
A. A. Vandervoort, D. G. Sale, and J. Moroz 46

Fast vs. slow exhalation before O_2 inhalation alters subsequent phase III slope
T. S. Hurst, B. L. Graham, and D. J. Cotton 52

Plasma osmolality, volume, and renin activity at the "anaerobic threshold"
G. W. Gleim, P. M. Zabetakis, E. E. DePasquale, M. F. Michelis, and J. A. Nicholas 57

Effect on ventilation of change to the upright posture in newborn infants
A. R. Stark, T. B. Waggener, I. D. Frantz III, B. A. Cohlan, H. A. Feldman, and P. C. Kosch 64

Effects of cell swelling on fluid flow across alveolar epithelium
J. D. Schaeffer, K.-J. Kim, and E. D. Crandall 72

Adaptations to a high-fat diet that increase exercise endurance in male rats
W. C. Miller, G. R. Bryce, and R. K. Conlee 78

Diphasic ventilatory response to hypoxia in newborn lambs
M. A. Bureau, R. Zinman, P. Foulon, and R. Begin 84

Hydration and vascular fluid shifts during exercise in the heat
M. N. Sawka, R. P. Francesconi, N. A. Pimental, and K. B. Pandolf 91

Effect of posture on thoracoabdominal movements during CO_2 rebreathing
K. R. Chapman and A. S. Rebuck 97

Tissue pressure and plasma oncotic pressure during exercise
V. Mohsenin and R. R. Gonzalez 102

Red cell function at extreme altitude on Mount Everest
R. M. Winslow, M. Samaja, and J. B. West 109

Effect of experimental dysthyroidism on the enzymatic character of the diaphragm
C. D. Ianuzzo, V. Chen, P. O'Brien, and T. G. Keens 117

Bronchial responsiveness to methacholine and effects of respiratory maneuvers
M. Sestier, L. Pineau, A. Cartier, R. R. Martin, and J. L. Malo 122

Threshold of airway response to inhaled methacholine in healthy men and women
N. Zamel 129

Mechanics of the respiratory system and breathing pattern during sleep in normal humans
D. W. Hudgel, R. J. Martin, B. Johnson, and P. Hill 133

Physical fitness and cardiovascular response to lower body negative pressure
P. B. Raven, D. Rohm-Young, and C. G. Blomqvist 138

Alterations in blood volume following short-term supramaximal exercise
H. J. Green, J. A. Thomson, M. E. Ball, R. L. Hughson, M. E. Houston, and M. T. Sharratt 145

Ventrolateral medullary surface blood flow determined by hydrogen clearance
P. J. Feustel, M. J. Stafford, J. S. Allen, and J. W. Severinghaus 150

Ventilation by high-frequency oscillation of thorax or at trachea in rats
A. Harf, C. Bertrand, and H. K. Chang 155

Net O_2, CO_2, lactate, and acid exchange by muscle during progressive working contractions
S. J. Chirtel, R. W. Barbee, and W. N. Stainsby 161

Cigarette smoke acutely increases collateral resistance in excised dog lobes
M. Nakamura and J. Hildebrandt 166

Effect of mechanical loading on breathing patterns in women
K. Axen, F. Haas, D. Gaudino, and S. S. Haas 175

Oscillatory mechanics of the respiratory system in ozone-exposed rats
M. I. Kotlikoff, A. C. Jackson, and J. W. Watson 182

High-frequency ventilation in lung edema: effects on gas exchange and perfusion
P. H. Breen, J. Ali, and L. D. H. Wood 187

Voluntary induced alterations in regional ventilation in normal humans
M. G. Sampson and G. C. Smaldone 196

Temperature effect on the human dive response in relation to cold water near-drowning
J. S. Hayward, C. Hay, B. R. Matthews, C. H. Overweel, and D. D. Radford 202

Variable inhibition by falling CO_2 of hypoxic ventilatory response in humans
L. G. Moore, S. Y. Huang, R. E. McCullough, J. B. Sampson, J. T. Maher, J. V. Weil, R. F. Grover, J. K. Alexander, and J. T. Reeves 207

Comparison of subjects' perception of inspiratory and expiratory resistance
S. R. Muza, S. McDonald, and F. W. Zechman 211

Tritiated water metabolism during dehydration and rehydration in the camel
Z. Etzion, N. Meyerstein, and R. Yagil 217

Isotopic determination of amino acid-urea interactions in exercise in humans
R. R. Wolfe, M. H. Wolfe, E. R. Nadel, and J. H. F. Shaw 221

SPECIAL COMMUNICATIONS

Effect of substrate intake and physiological state on background $^{13}CO_2$ enrichment
R. R. Wolfe, J. H. F. Shaw, E. R. Nadel, and M. H. Wolfe 230

Microcomputer-assisted on-line measurement of breathing pattern and occlusion pressure
F. G. Lind, A. B. Truvé, and B. P. O. Lindborg 235

Relationship of skin surface area to body mass in the immature rat: a reexamination
D. E. Spiers and V. Candas 240

Estimation of skeletal muscle fiber number by mean fiber dry weight
B. F. Timson and G. A. Dudenhoeffer 244

Accurate reference measurement for postmortem lung water
M. Julien, M. R. Flick, J. M. Hoeffel, and J. F. Murray 248

Characterizing and correcting for the dynamic response of a bag-in-box system
J. H. T. Bates, G. K. Prisk, T. E. Tanner, and A. E. McKinnon 254

LETTERS TO THE EDITOR

On the breath-to-breath estimation of gas exchange
G. D. Swanson and D. L. Sherrill; H. U. Wessel, R. L. Stout, and M. H. Paul; W. L. Beaver, N. Lamarra, and K. Wasserman 259

ABSTRACTS FROM CURRENT LITERATURE 262

ANNOUNCEMENTS 268

No. 2. FEBRUARY 1984

EDITORIAL

What's in a name?
A. P. Fishman 269

Interstitial fluid pressure gradient measured by micropuncture in excised dog lung
J. Bhattacharya, M. A. Gropper, and N. C. Staub 271

Influence of suspension hypokinesia on rat soleus muscle
G. H. Templeton, M. Padalino, J. Manton, M. Glasberg, C. J. Silver, P. Silver, G. DeMartino, T. Leconey, G. Klug, H. Hagler, and J. L. Sutko 278

Intramuscular fluid pressure during isometric contraction of human skeletal muscle
O. M. Sejersted, A. R. Hargens, K. R. Kardel, P. Blom, Ø. Jensen, and L. Hermansen 287

Isometric or dynamic training: differential effects on mechanical properties of a human muscle
J. Duchateau and K. Hainaut 296

Development of cardiorespiratory function in circumpubertal boys: a longitudinal study
D. A. Cunningham, D. H. Paterson, C. J. R. Blimkie, and A. P. Donner 302

Massive postmortem bronchoconstriction in guinea pig lungs
Y.-L. Lai, W. J. E. Lamm, D. L. Luchtel, and J. Hildebrandt 308

Availability of glucose given orally during exercise
G. Krzentowski, B. Jandrain, F. Pirnay, F. Mosora, M. Lacroix, A. S. Luyckx, and P. J. Lefebvre 315

Postnatal maturation of ventilation and breathing pattern in kittens: influence of sleep
D. Marlot, M. Bonora, H. Gautier, and B. Duron 321

Action of neck accessory muscles on rib cage in dogs
A. De Troyer and S. Kelly 326

Fructose utilization by lung
D. K. Das, A. Neogi, and H. Steinberg 333

Effect of alveolar hypoxia on regional pulmonary perfusion
P. H. Neumann, C. M. Kivlen, A. Johnson, F. L. Minnear, and A. B. Malik 338

Intra-airway gas mixing during high-frequency ventilation
J. Solway, N. Gavriely, R. D. Kamm, J. M. Drazen, R. H. Ingram, Jr., M. C. K. Khoo, R. Brown, and A. S. Slutsky 343

Role of pulmonary lymphatics and interstitium in visceral pleural fluid exchange
G. T. Kinasewitz, L. J. Groome, R. P. Marshall, and J. N. Diana 355

Effect of ventilation and perfusion imbalance on inert gas rebreathing variables
M. Friedman, S. A. Wilkins, Jr., A. F. Rothfeld, and P. A. Bromberg 364

Pulmonary vasoconstrictor response to acute decrease in blood P_{50}
B. P. Teisseire and C. D. Soulard 370

Angiotensin is not required for hypoxic constriction in salt solution-perfused rat lungs
I. F. McMurtry 375

Effect of an exercise regimen on development of hypertension in rats
M. J. Fregly 381

Repeated lung injury due to α-naphthylthiourea causes right ventricular hypertrophy in rats
N. S. Hill, R. F. O'Brien, and S. Rounds 388

Responses to chemical stimulation of upper airway muscles and diaphragm in awake cats
M. A. Haxhiu, E. van Lunteren, J. Mitra, and N. S. Cherniack 397

Effect of background loading on perception of inspiratory loads
W. R. Revelette, F. W. Zechman, Jr., D. E. Parker, and R. L. Wiley 404

Effects of granulocyte depletion on pulmonary responsiveness to aerosol histamine
J. M. Hinson, Jr., A. A. Hutchison, K. L. Brigham, B. O. Meyrick, and J. R. Snapper 411

Model analysis of gas distribution within human lung acinus
M. Paiva and L. A. Engel 418

Autonomic regulation of viscoelasticity of cat tracheal gland secretions
G. D. Leikauf, I. F. Ueki, and J. A. Nadel 426

Glucose uptake and glycogen synthesis in muscles from immobilized limbs
W. F. Nicholson, P. A. Watson, and F. W. Booth 431

Effects of naloxone on maximal stress testing in females
R. G. McMurray, D. S. Sheps, and D. M. Guinan 436

Mechanisms producing tachycardia in conscious baboons during environmental heat stress
A. J. Gorman and D. W. Proppe 441

Presynaptic neurotransmitter and chemosensory responses to natural stimuli
M. Pokorski and S. Lahiri 447

Ventilation-perfusion relationship during high-frequency ventilation
V. Brusasco, T. J. Knopp, E. R. Schmid, and K. Rehder 454

Protein egress and entry rates in pleural fluid and plasma in sheep
J. P. Wiener-Kronish, K. H. Albertine, V. Ličko, and N. C. Staub 459

Ventilatory muscles during exercise in air and oxygen in normal men
P. T. P. Bye, S. A. Esau, K. R. Walley, P. T. Macklem, and R. L. Pardy 464

Pathophysiological patterns of resolution from acute oleic acid lung injury in the dog
R. B. Schoene, H. T. Robertson, D. R. Thorning, S. C. Springmeyer, M. P. Hlastala, and F. W. Cheney 472

Adrenocortical responses to maximal exercise in moderate-altitude natives at 447 Torr
C. M. Maresh, B. J. Noble, K. L. Robertson, and R. L. Seip 482

Effect of endotoxin on lung fluid balance in unanesthetized sheep
J. C. Gabel, T. N. Hansen, and R. E. Drake 489

Exercise efficiency during arm ergometry: effects of speed and work rate
S. K. Powers, R. E. Beadle, and M. Mangum 495

Upper airway negative-pressure effects on respiratory activity of upper airway muscles
O. P. Mathew 500

Lung compliance changes on high-frequency ventilation in normal dogs
G. G. Weinmann, B. A. Simon, and W. Mitzner 506

Bubble formation in crustaceans following decompression from hyperbaric gas exposures
P. M. McDonough and E. A. Hemmingsen 513

Estimation of anaerobic energy production and efficiency in rats during exercise
G. A. Brooks, C. M. Donovan, and T. P. White 520

Pleural liquid pressure gradients and intrapleural distribution of injected bolus
G. Miserocchi, M. Pistolesi, M. Miniati, C. R. Bellina, D. Negrini, and C. Giuntini 526

SPECIAL COMMUNICATIONS

Laryngoscopic endotracheal intubation of rats for inhalation anesthesia
C. F. Schaefer, D. J. Brackett, P. Downs, P. Tompkins, and M. F. Wilson 533

Estimation of response slopes in respiratory control
D. L. Sherrill and G. D. Swanson 536

BOOKSHELF

Partners in the Research Enterprise by T. W. Langfitt, S. Hackney, A. P. Fishman, and A. V. Glowasky
Reviewed by *J. Moskowitz* 540

ABSTRACTS FROM CURRENT LITERATURE 542

ANNOUNCEMENTS 548

No. 3. MARCH 1984

ANNOUNCEMENT

Statistics Report #3 551

BRIEF REVIEW

Mechanisms of gas transport during ventilation by high-frequency oscillation
H. K. Chang 553

Adrenalectomy and surfactant in adult rats
D. Liebowitz, G. D. Massaro, and D. Massaro 564

Automatic selection of uncontaminated electromyogram as applied to respiratory muscle fatigue
A. Arvidsson, A. Grassino, and L. Linström 568

Strength and cycle time of high-altitude ventilatory patterns in unacclimatized humans
T. B. Waggener, P. J. Brusil, R. E. Kronauer, R. A. Gabel, and G. F. Inbar 576

Effects of immunization on cardiopulmonary alterations of gram-negative endotoxemia
M. J. Girotti, E. Menkes, J. W. D. MacDonald, K. Hong, A. Patterson, and T. R. J. Todd 582

Interaction between histamine and vagal stimulation on tracheal smooth muscle in dogs
Y. Kikuchi, H. Okayama, M. Okayama, H. Sasaki, and T. Takishima 590

Gas trapping in excised rabbit lungs depends on volume history and method of degassing
W. Hida, W. J. E. Lamm, and J. Hildebrandt 596

Hypocapnia and sustained hypoxia blunt ventilation on arrival at high altitude
S. Y. Huang, J. K. Alexander, R. F. Grover, J. T. Maher, R. E. McCullough, R. G. McCullough, L. G. Moore, J. B. Sampson, J. V. Weil, and J. T. Reeves 602

Effect of transcendental meditation on breathing and respiratory control
N. Wolkove, H. Kreisman, D. Darragh, C. Cohen, and H. Frank 607

Effects of endurance exercise on metabolic water production and plasma volume
J. M. Pivarnik, E. M. Leeds, and J. E. Wilkerson 613

Echocardiographic evaluation of ventricles during continuous positive airway pressure breathing
F. Jardin, J.-C. Farcot, P. Guéret, J.-F. Prost, Y. Ozier, and J.-P. Bourdarias 619

Aerobic parameters of exercises as a function of body size during growth in children
D. M. Cooper, D. Weiler-Ravell, B. J. Whipp, and K. Wasserman 628

Thermoregulatory responses to exercise in dehydrated dogs
M. A. Baker 635

Maximum coronary blood flow and minimum coronary resistance in exercise-trained dogs
I. Y. S. Liang, M. Hamra, and H. L. Stone 641

Function of canine diaphragm with hypovolemic shock and β-adrenergic blockade
S. M. Scharf and H. Bark 648

Effects of exercise on collateral development in myocardial ischemia in pigs
C. M. Bloor, F. C. White, and T. M. Sanders 656

Hypoxia alters blood coagulation during acute decompression in humans
H. M. O'Brodovich, M. Andrew, G. W. Gray, and G. Coates 666

Heat production during sleep
C. M. Shapiro, C. C. Goll, G. R. Cohen, and I. Oswald 671

Ventilatory CO_2 responses during hypocapnia in anesthetized cats
S. M. Yamashiro and S. Ghazanshahi 678

Interrupter technique for measurement of respiratory mechanics in anesthetized cats
S. B. Gottfried, A. Rossi, P. M. A. Calverley, L. Zocchi, and J. Milic-Emili 681

Failure of myocardial ischemia to increase pulmonary microvascular permeability in dogs
J. C. Parker, L. Campbell, S. Gilchrist, G. Longenecker, and A. E. Taylor 691

Alveolar ventilation during high-frequency oscillation: core dead space concept
D. Isabey, A. Harf, and H. K. Chang 700

Factors affecting expired waveform for carbon monoxide
D. Z. Rubin, S. M. Lewis, and C. Mittman 708

Hemodynamic and metabolic responses to exercise after adrenoceptor blockade in humans
A. A. McLeod, J. E. Brown, B. B. Kitchell, F. A. Sedor, C. Kuhn, D. G. Shand, and R. S. Williams 716

Site of deposition and factors affecting clearance of aerosolized solute from canine lungs
N. W. Rizk, J. M. Luce, J. M. Hoeffel, D. C. Price, and J. F. Murray 723

Phasic volume-related feedback on upper airway muscle activity
E. van Lunteren, K. P. Strohl, D. M. Parker, E. N. Bruce, W. B. Van de Graaff, and N. S. Cherniack 730

Effects of dopamine, isoproterenol, and lobeline on cranial and phrenic motoneurons
E. van Lunteren, M. A. Haxhiu, J. Mitra, and N. S. Cherniack 737

Nasal and laryngeal reflex responses to negative upper airway pressure
E. van Lunteren, W. B. Van de Graaff, D. M. Parker, J. Mitra, M. A. Haxhiu, K. P. Strohl, and N. S. Cherniack 746

Respiratory muscle length measured by sonomicrometry
S. Newman, J. Road, F. Bellemare, J. P. Clozel, C. M. Lavigne, and A. Grassino 753

Instantaneous venous return curves in an intact canine preparation
M. R. Pinsky 765

Hormonal factors in reduced postprandial heat production of exercise-trained subjects
J. LeBlanc, P. Diamond, J. Côté, and A. Labrie 772

Breathing pattern in humans: elevated CO_2 or low O_2 on positive airway pressure
J. A. Hirsch and B. Bishop 777

SPECIAL COMMUNICATIONS

On the mechanics of mucociliary flows. III. Flow-velocity profiles in frog palate mucus
H. Winet, G. T. Yates, T. Y. Wu, and J. Head 785

Micromethod for dynamic determination of O_2 dissociation curves using a P_{O_2} electrode
M. C. Barnhart 795

Laser-Doppler measurement of skin blood flow: comparison with plethysmography
J. M. Johnson, W. F. Taylor, A. P. Shepherd, and M. K. Park 798

In-phase rejection requirements for measuring respiratory input impedance
R. Peslin, P. Jardin, C. Duvivier, and P. Begin 804

A model of embolic chronic pulmonary hypertension in the dog
I. Shelub, A. van Grondelle, R. McCullough, S. Hofmeister, and J. T. Reeves 810

BOOKSHELF

Books received for review 816

LETTERS TO THE EDITOR

Measurement of tracheal lung sounds
N. Gavriely, G. Charbonneau, J.-L. Racineux, M. Sudraud, and E. Tuchais 818

ABSTRACTS FROM CURRENT LITERATURE

819

ANNOUNCEMENTS

827

No. 4. APRIL 1984

ANNOUNCEMENT

Statistics Report #4 829

BRIEF REVIEW

Adaptations of skeletal muscle to endurance exercise and their metabolic consequences
J. O. Holloszy and E. F. Coyle 831

Control of breathing at elevated lung volumes in anesthetized cats
J. Finkler and S. Iscoe 839

Effects of stopping exercise training on epinephrine-induced lipolysis in humans
W. H. Martin III, E. F. Coyle, M. Joyner, D. Santeusanio, A. A. Ehsani, and J. O. Holloszy 845

An analysis of the mechanism by which γ-aminobutyric acid depresses ventilation in the rat
J. Hedner, T. Hedner, P. Wessberg, and J. Jonason 849

Assessment of pulmonary microvascular permeability in acutely prepared sheep
M. I. Townsley, D. E. McClure, and W. J. Weidner 857

Filtration coefficient obtained by stepwise pressure elevation in isolated dog lung
I. C. Ehrhart, W. M. Granger, and W. F. Hofman 862

Bioelectric properties and ion flow across excised human bronchi
M. Knowles, G. Murray, J. Shallal, F. Askin, V. Ranga, J. Gatzy, and R. Boucher 868

Effect of edema and hemodynamic changes on extravascular thermal volume of the lung
B. A. Gray, R. C. Beckett, R. C. Allison, D. R. McCaffree, R. M. Smith, E. D. Sivak, and P. V. Carlile, Jr. 878

Effects of pyridostigmine on ability of rats to work in the heat
R. Francesconi, R. Hubbard, and M. Mager 891

Heat exchange following atropine injection before and after heat acclimation
M. A. Kolka, W. L. Holden, and R. R. Gonzalez 896

Lung edema due to hydrogen peroxide is independent of cyclooxygenase products
O. Burghuber, M. M. Mathias, I. F. McMurtry, J. T. Reeves, and N. F. Voelkel 900

Effect of exercise and oral contraceptive agents on fibrinolytic potential in trained females
I. A. Huisveld, C. Kluft, A. J. H. Hospers, M. J. E. Bernink, W. B. M. Erich, and B. N. Bouma 906

An evaluation of ventilation in dystrophic Syrian hamsters
E. H. Schlenker 914

Effects and mechanism of action of terbutaline on diaphragmatic contractility and fatigue
M. Aubier, N. Viires, D. Murciano, G. Medrano, Y. Lecocguic, and R. Pariente 922

Effect of mild essential hypertension on control of forearm blood flow during exercise in the heat
W. L. Kenney, E. Kamon, and E. R. Buskirk 930

Airway response to inhaled methacholine in healthy nonsmoking twins
N. Zamel, M. Leroux, and J. L. Vanderdoelen 936

Respiratory effects of progressive asphyxia in rabbit pups and adult rabbits
T. Trippenbach, R. Affleck, and G. Kelly 940

Pressure-volume curve of lung and lobes in kittens
J. P. Mortola, A. Rossi, and L. Zocchi 948

Peak oxygen uptake during arm cranking for men and women
R. A. Washburn and D. R. Seals 954

Cholinergic and nonadrenergic mechanisms in human and guinea pig airways
S. M. Taylor, P. D. Paré, and R. R. Schellenberg 958

Effect of pulmonary blood flow on leukocyte uptake and release by dog lung
H. V. Thommasen, B. A. Martin, B. R. Wiggs, M. Quiroga, E. M. Baile, and J. C. Hogg 966

Changes in cell number and lung morphology during early postpneumonectomy lung growth
L. A. Thet and D. J. Law 975

Lung fluid balance, vascular permeability, and gas exchange after acid aspiration in awake goats
R. Winn, J. Stothert, B. Nadir, and J. Hildebrandt 979

Comparison of vasoactive intestinal peptide and isoproterenol relaxant effects in isolated cat airways
R. J. Altiere and L. Diamond 986

Fluid balance in ANTU-injured lungs during crystalloid and colloid infusions
G. Rutili, J. C. Parker, and A. E. Taylor 993

Cyclooxygenase inhibition during phorbol-induced granulocyte stimulation in awake sheep
J. H. Newman, J. E. Loyd, M. L. Ogletree, B. O. Meyrick, and K. L. Brigham 999

Identification of medullary loci critical for neurogenesis of gasping
W. M. St. John, T. A. Bledsoe, and H. W. Sokol 1008

Exercise performance with added dead space in chronic airflow obstruction
S. E. Brown, R. R. King, S. M. Temerlin, D. W. Stansbury, C. K. Mahutte, and R. W. Light 1020

Effects of acute exposure to high altitude on ventilatory drive and respiratory pattern
N. K. Burki 1027

Histamine and leukotrienes mediate pulmonary hypersensitivity to antigen in guinea pigs
W. J. E. Lamm, Y.-L. Lai, and J. Hildebrandt 1032

CO_2 rebreathing and exercise ventilatory responses in humans
S. M. Menitove, D. M. Rapoport, H. Epstein, B. Sorkin, and R. M. Goldring 1039

Persistent cardiomegaly induced by carbon monoxide and associated tachycardia
D. G. Penney, A. E. Stryker, and M. S. Baylerian 1045

Breathing pattern during induced bronchoconstriction
T. S. Chadha, A. W. Schneider, S. Birch, G. Jenouri, and M. A. Sackner 1053

Regulation of fatty acid biosynthesis in rats by physical training
R. Scorpio, R. L. Rigsby, D. R. Thomas, and B. D. Gardner 1060

Adequacy of tissue oxygenation in intact dog intestine
C. M. Grum, R. G. Fiddian-Green, G. L. Pittenger, B. J. B. Grant, E. D. Rothman, and D. R. Dantzker 1065

Latency in onset of decompression sickness on direct ascent from air saturation
R. G. Eckenhoff and J. W. Parker 1070

Source of the fluid component of secretions from tracheal submucosal glands in cats
R. J. Corrales, J. A. Nadel, and J. H. Widdicombe 1076

Effects of left atrial pressure elevation and histamine infusion on lung lymph in awake sheep
G. R. Bernard, J. R. Snapper, A. A. Hutchison, and K. L. Brigham 1083

Effect of aerosol histamine on lung lymph in awake sheep
A. A. Hutchison, G. R. Bernard, J. R. Snapper, and K. L. Brigham 1090

Adaptations of quadriplegic men to consecutively loaded breaths
K. Axen 1099

Attenuated skin blood flow response to hyperthermia in paraplegic men
P. R. Freund, G. L. Brengelmann, L. B. Rowell, and E. Halar 1104

Relation between respiratory neural output and tidal volume
M. Younes and W. Riddle 1110

SPECIAL COMMUNICATIONS

Calibration methods in respiratory calorimetry
B. A. Young, T. W. Fenton, and J. A. McLean 1120

Computer processing of phrenic neurograms
H. J. Bryant and P. H. Abbrecht 1126

MEETING REPORT

Animal pain
H. H. Erickson 1135

ABSTRACTS FROM CURRENT LITERATURE 1137

No. 5. MAY 1984

ANNOUNCEMENT

Statistics Reports #5, #6, and #7 1141

Effect of aging on ventilatory response to exercise and CO_2
M. J. Brischetto, R. P. Millman, D. D. Peterson, D. A. Silage, and A. I. Pack 1143

Comparative features of Starling-lymphatic interaction at the pleural level in mammals
G. Miserocchi, D. Negrini, and J. P. Mortola 1151

Level of physical fitness and adipocyte lipolysis in humans
J. P. Després, C. Bouchard, R. Savard, A. Tremblay, M. Marcotte, and G. Thériault 1157

How alterations in pleural pressure influence esophageal pressure
A. N. Hurewitz, U. Sidhu, E. H. Bergofsky, and A. D. Chanana 1162

Influence of embolism and imipramine on kinetics of serotonin uptake by dog lung
D. A. Rickaby, C. A. Dawson, and J. H. Linehan 1170

Newborn puppy cerebral acid-base regulation in experimental asphyxia and recovery
E. E. Nattie, W. H. Edwards, and M. Marin-Padilla 1178

Energy cost of and energy sources for alpine skiing in top athletes
A. Veicsteinas, G. Ferretti, V. Margonato, G. Rosa, and D. Tagliabue 1187

Interacting effects of hypoxia adaptation and acute hypercapnia on oxygen tolerance in rats
J. M. Clark 1191

Effect of puberty and estradiol on the hypoxic vasomotor response in isolated sheep lungs
R. C. Wetzel, H. A. Zacur, and J. T. Sylvester 1199

Sex differences in growth patterns of the airways and lung parenchyma in children
R. D. Pagtakhan, J. C. Bjelland, L. I. Landau, G. Loughlin, W. Kaltenborn, G. Seeley, and L. M. Taussig 1204

Rib cage and abdomial contributions to ventilatory response to CO_2 in infants
Y. Honma, D. Wilkes, M. H. Bryan, and A. C. Bryan 1211

Effect of exercise training on whole-body insulin insensitivity and responsiveness
D. E. James, E. W. Kraegen, and D. J. Chisholm 1217

Chemical activation of group I and II muscle afferents has no cardiorespiratory effects
T. G. Waldrop, K. J. Rybicki, and M. P. Kaufman 1223

Gas-blood P_{CO_2} and P_{O_2} equilibration in a steady-state rebreathing dog preparation
J. S. Clark, A. G. Cutillo, M. J. Criddel, D. V. Collins, F. L. Farr, A. H. Bigler, and A. D. Renzetti, Jr. 1229

Determinants of pulmonary arterial flow variation during respiration
M. R. Pinsky 1237

Prostaglandin I_2 supports blood flow to hypoxic alveoli in anesthetized dogs
R. S. Sprague, A. H. Stephenson, and A. J. Lonigro 1246

Unilateral acute lung injury induced by ethchlorvynol in anesthetized dogs
A. H. Stephenson, R. S. Sprague, T. E. Dahms, and A. J. Lonigro 1252

Effect of training on blood lactate levels during submaximal exercise
B. F. Hurley, J. M. Hagberg, W. K. Allen, D. R. Seals, J. C. Young, R. W. Cuddihee, and J. O. Holloszy 1260

Effect on arterial pressure of rhythmically contracting the hindlimb muscles of cats
M. P. Kaufman, K. J. Rybicki, T. G. Waldrop, and J. H. Mitchell 1265

Airway responses in offspring of dogs with and without airway hyperreactivity
C. A. Hirshman, H. Downes, and L. Veith 1272

Effects of naloxone on the Hering-Breuer apnea in sleeping kittens
C. M. Chow and D. J. C. Read 1278

Reflex regulation of sweat rate by skin temperature in exercising humans
J. M. Johnson, D. S. O'Leary, W. F. Taylor, and M. K. Park 1283

Positive end-expiratory pressure decreases bronchial blood flow in the dog
E. M. Baile, R. K. Albert, W. Kirk, S. Lakshaminarayan, B. J. R. Wiggs, and P. D. Paré 1289

Effects of thoracic volume and shape on electromechanical coupling in abdominal muscles
A. R. Hill, D. L. Kaiser, and D. F. Rochester 1294

A modified anaerobic method of sweat collection
T. C. Boysen, S. Yanagawa, F. Sato, and K. Sato 1302

Neuromuscular response to resistive unloading: helium vs. bronchodilation
E. L. DeWeese, T. Y. Sullivan, and P. L. Yu 1308

Metabolic availability of glucose ingested 3 h before prolonged exercise in humans
B. Jandrain, G. Krzentowski, F. Pirnay, F. Mosora, M. Lacroix, A. Luyckx, and P. J. Lefebvre 1314

Salutary effect of fall in abdominal pressure during diaphragm paralysis
S. Kelly, W. A. Zin, M. Decramer, and A. De Troyer 1320

Exercise-induced adaptations of rat soleus muscle grafts
T. P. White, J. F. Villanacci, P. G. Morales, S. S. Segal, and D. A. Essig 1325

Role of $\dot{V}CO_2$ in control of breathing of awake exercising dogs
F. M. Bennett, R. D. Tallman, Jr., and F. S. Grodins 1335

Leukotriene synthesis and receptor blockers block hypoxic pulmonary vasoconstriction
M. L. Morganroth, J. T. Reeves, R. C. Murphy, and N. F. Voelkel 1340

Ventilatory response to hypercapnia during sleep and wakefulness in cats
A. Netick, W. J. Dugger, and R. A. Symmons 1347

Thermal responses during arm and leg and combined arm-leg exercise in water
M. M. Toner, M. N. Sawka, and K. B. Pandolf 1355

Albumin-induced plasma volume expansion: diurnal and temperature effects
R. W. Hubbard, W. T. Matthew, D. Horstman, R. Francesconi, M. Mager, and M. N. Sawka 1361

Modulation of cardiovascular response to dynamic exercise by fastigial nucleus
K. J. Dormer 1369

Adaptive responses of rats trained with reductions in exercise heart rate
W. J. Mullin, R. E. Herrick, V. Valdez, and K. M. Baldwin 1378

Comparison of amounts of collagen and elastin in pleura and parenchyma of dog lung
E. H. Oldmixon and F. G. Hoppin, Jr. 1383

A model of unsteady-state transvascular fluid and protein transport in the lung
R. J. Roselli, R. E. Parker, and T. R. Harris 1389

Effect of hypoxic hypoxia on systemic vasculature
J. Malo, H. Goldberg, R. Graham, H. Unruh, and C. Skoog 1403

Effects of airflow and work load on cardiovascular drift and skin blood flow
J. D. Shaffrath and W. C. Adams 1411

Mechanism of hyperpnea induced by changes in pulmonary blood flow
J. F. Green and N. D. Schmidt 1418

SPECIAL COMMUNICATIONS

Effect of O_2, N_2, and CO_2 composition on nonlinearity of Fleisch pneumotachograph characteristics
M. P. Yeh, T. D. Adams, R. M. Gardner, and F. G. Yanowitz 1423

Measurement of hormones and blood gases during hypoxia in conscious cannulated rats
H. Raff and K. D. Fagin 1426

Skin gas tensions and resistances measured by mass spectrometry in adults
R. C. Targett, O. Kocher, K. Muramatsu, and M. B. McIlroy 1431

Automatic mechanical alveolar gas sampler for multiple-sample collection in the field
K. H. Maret, J. O. Billups, R. M. Peters, Jr., and J. B. West 1436

Cardiopulmonary effects of unilateral airway pressure changes in intact infant lambs
B. P. Fuhrman, J. Everitt, and J. E. Lock 1439

BOOKSHELF

Books received for review 1449

ABSTRACTS FROM CURRENT LITERATURE 1450

No. 6. JUNE 1984

Endurance training effects on plasma hormonal responsiveness and sex hormone excretion
B. A. Bullen, G. S. Skrinar, I. Z. Beitins, D. B. Carr, S. M. Reppert, C. O. Dotson, M. de M. Fencl, E. V. Gervino, and J. W. McArthur 1453

Effects of hypoxia on ventilation during postnatal development in conscious kittens
M. Bonora, D. Marlot, H. Gautier, and B. Duron 1464

Ten years of "civilization": fitness of the Canadian Inuit
A. Rode and R. J. Shephard 1472

Relationship of hypoxic ventilatory response to exercise performance on Mount Everest
R. B. Schoene, S. Lahiri, P. H. Hackett, R. M. Peters, Jr., J. S. Milledge, C. J. Pizzo, F. H. Sarnquist, S. J. Boyer, D. J. Graber, K. H. Maret, and J. B. West 1478

Mechanical arrangement of costal and crural diaphragms in dogs
M. Decramer, A. De Troyer, S. Kelly, and P. T. Macklem 1484

Gas concentration profiles along airways of dog lungs during high-frequency ventilation
T. Kaethner, J. Kohl, and P. Scheid 1491

Role of collateral ventilation in ventilation-perfusion balance
T. Kuriyama, L. P. Latham, L. D. Horwitz, J. T. Reeves, and W. W. Wagner, Jr. 1500

Naloxone reduces decrease in ventilation induced by hypoxia in newborn infants
C. De Boeck, P. Van Reempts, H. Rigatto, and V. Chernick 1507

Effect of lung injuries on [^{14}C]urea permeability-surface area product in dogs
M. Zelter, A. Lipavsky, J. M. Hoeffel, and J. F. Murray 1512

Glucose tolerance in young and older athletes and sedentary men
D. R. Seals, J. M. Hagberg, W. K. Allen, B. F. Hurley, G. P. Dalsky, A. A. Ehsani, and J. O. Holloszy 1521

Performance of hypothermic isolated rat heart at various levels of blood acid-base status
M. Sinet, M. Muffat-Joly, D. Henzel, G. Renault, and J. J. Pocidalo 1526

Breathing pattern in newborns
J. P. Mortola 1533

Central-peripheral chemoreceptor interaction in awake cerebrospinal fluid-perfused goats
C. A. Smith, L. C. Jameson, G. S. Mitchell, T. I. Musch, and J. A. Dempsey 1541

Role of vagal C-fiber afferents in respiratory response to hypercapnia
N. J. W. Russell, H. E. Raybould, and D. Trenchard 1550

A role for neural pathways in exercise hyperpnea
F. M. Bennett 1559

Thermal adjustment to cold-water exposure in resting men and women
W. D. McArdle, J. R. Magel, T. J. Gergley, R. J. Spina, and M. M. Toner 1565

Thermal adjustment to cold-water exposure in exercising men and women
W. D. McArdle, J. R. Magel, R. J. Spina, T. J. Gergley, and M. M. Toner 1572

Contribution of lung stretch depressor reflex to nonlinear fall in cardiac output during PEEP
J. J. Schreuder, J. R. C. Jansen, and A. Versprille 1578

Respiratory response to partial paralysis in anesthetized dogs
A. Oliven, E. C. Deal, Jr., S. G. Kelsen, and N. S. Cherniack 1583

No effect of sex steroids on compensatory muscle hypertrophy
S. R. Max and N. E. Rance 1589

Interrelationships of contraction time, V_{max}, and myosin ATPase after spinal transection
R. R. Roy, R. D. Sacks, K. M. Baldwin, M. Short, and V. R. Edgerton 1594

Relative independence of metabolic enzymes and neuromuscular activity
K. M. Baldwin, R. R. Roy, R. D. Sacks, C. Blanco, and V. R. Edgerton 1602

EMG activity of slow and fast ankle extensors following spinal cord transection
M. A. Alaimo, J. L. Smith, R. R. Roy, and V. R. Edgerton 1608

Central neural respiratory response to carotid sinus nerve stimulation in newborns
E. E. Lawson and W. A. Long 1614

Potentiation of surfactant release in fetal lung by thyroid hormone action
D. K. Das, J. Ayromlooi, D. Bandyopadhyay, S. Bandyopadhyay, A. Neogi, and H. Steinberg 1621

Augmentation of CO_2 drives by chlormadinone acetate, a synthetic progesterone
H. Kimura, F. Hayashi, A. Yoshida, S. Watanabe, I. Hashizume, and Y. Honda 1627

Pleural liquid pressure measured by micropipettes in rabbits
S. J. Lai-Fook, K. C. Beck, and P. A. Southorn 1633

Ventilatory response to chronic metabolic acidosis and alkalosis in the dog
N. E. Madias, W. H. Bossert, and H. J. Adrogué 1640

Density of lean body mass is greater in Blacks than in Whites
J. E. Schwite, E. J. Townsend, J. Hugg, R. F. Shoup, R. M. Malina, and C. G. Blomqvist 1647

Vagal control of respiratory pattern during hyperpnea in domestic fowl
M. Gleeson and J. H. Brackenbury 1650

Relationship of ventilatory capacity to hyperbaric exposure in divers
I. S. Davey, J. E. Cotes, and J. W. Reed 1655

SPECIAL COMMUNICATIONS

Accuracy of tidal volume, lung volume, and flow measurements by inductance vest in COPD patients
D. W. Hudgel, M. Capehart, B. Johnson, P. Hill, and D. Robertson 1659

Noninvasive detection of airway constriction in awake guinea pigs
S. A. Silbaugh and J. L. Mauderly 1666

Applicability of echocardiography in volume determinations in experimental animals
R. M. Lust, Jr., L. O. Lutherer, and M. W. Cooper 1670

Dynamic water vapor and temperature calibration system
F. W. Montague, Jr., F. P. Primiano, Jr., and G. M. Saidel 1675

Measurement system for respiratory water vapor and temperature dynamics
F. P. Primiano, Jr., F. W. Montague, Jr., and G. M. Saidel 1679

LETTERS TO THE EDITOR

Normal human airway response to exercise
J. Warren and S. Jennings 1686

BOOKSHELF

Books Received for Review 1687

ABSTRACTS FROM CURRENT LITERATURE

1688

Subject Index to Volume 56 1693
Author Index to Volume 56 1707